A.D. 58 instead of A.D. 138, the alleged epoch. The year A.D. 58 is 187 years after the epoch of Hipparchus, which gives the amount of precession = 2° 36′, agreeing closely with the difference of 2° 40′ found by Ptolemy. Mr. Knobel remarks that, as the correction could not represent positions observed in A.D. 138, this supports the view that the catalogue is simply that of Hipparchus, with a constant amount added to the longitudes.

But this conclusion is by no means certain, and was not accepted by Peters when he spoke on this subject at the Kiel meeting of the Astronomische Gesellschaft in 1887, less than three years before his death. According to the very short report in the *Vierteljahrsschrift* (xxii., p. 269), Peters said that the constant error of the longitudes might very well be due to systematic errors of Ptolemy's instruments or to faults of the method (comparison of sun and stars with the moon as an intermediary), neglect of refraction, etc. The equinoxes of Ptolemy should not be assumed to possess the accuracy required to justify the above conclusion, and it would, in fact, be remarkable if such accuracy had been attained. Peters added that stars with large proper motion, especially 40 Eridani, agreed far better with the places of the stars at the time of Ptolemy than with those at the time of Hipparchus. To these reasons for hesitating to adopt the usual conclusion we would add the common belief among the Arabs that Ptolemy had borrowed his whole catalogue from Menelaus, adding 25′ (41 years' precession at 36″) to the longitudes. This seems in itself a far more likely origin of the catalogue than that it should have been borrowed from one made 270 years earlier. But the problem of the origin of Ptolemy's catalogue is still unsolved.

J. L. E. D.

PROF. H. C. JONES.

THE announcement in NATURE of May 18 of the death of Prof. Harry Jones, of Johns Hopkins University, will be received by his many friends in this country with sincere regret, for his transparent honesty and sincerity, his enthusiastic nature, his kindliness, and his courtesy impressed all with whom he came in contact.

Harry Clary Jones was born in New London, Maryland, in 1865, and received his academic education in the famous university of his State. He graduated as A.B. in 1889 and as Ph.D. in 1892. The next two years he spent in Europe working in the laboratories of Ostwald, Arrhenius, and van't Hoff. Permeated with the ideas and theories associated with these names, Jones returned to America and proceeded to promulgate them with boundless energy and enthusiasm. He received an appointment on the teaching staff of Johns Hopkins University, and was in time promoted to the chair of physical chemistry. Jones was a tireless worker himself and inspired his numerous co-workers with an equal industry. During the last twenty years he published, alone and in conjunction with them, well above a hundred papers, many of them memoirs of considerable magnitude, and found time in addition to write six books (text-books and semi-popular works), several of which have passed through a number of editions.

The line of research to which he chiefly devoted himself was the study of the intimate nature of solutions. In the "ideal" solutions of van't Hoff the mutual influence of solvent and solute may be neglected. The main object of the investigations of Jones and his fellow-workers was to ascertain the nature and extent of this influence in actual solutions. For aqueous solutions Mendeleeff had advanced the hypothesis that the dissolved substance existed in the form of a hydrate or hydrates of definite composition. Jones modified and extended this idea and held that dissolved substances in general are combined with more or less of the solvent as a series of solvates. To test this "solvate theory of solution" his extensive experimental work was devised. He explained abnormally low freezing-points of concentrated solutions as due to a portion of the solvent having combined with the solute, so that the concentration in the remaining solvent was greater than that deduced from the composition of the solution, and showed that this abnormality in aqueous solutions was greatest for those substances which crystallise most readily with water of crystallisation. By the use of the grating spectroscope he showed that the absorption bands of solutions became broader (1) as the solution became more concentrated, (2) as the temperature was raised, (3) as dehydrating substances were added. In each case this would correspond to the production of simpler hydrates. He also showed that different absorption bands were obtained according to the solvent in which the salts investigated (chiefly those of neodymium, which give sharp absorption bands) were dissolved, pointing to the formation of different solvates. By means of the radiomicrometer he demonstrated finally that the water in concentrated solutions of non-absorbing salts showed a smaller absorption in the infra-red region than water itself.

Of his text-books the "Elements of Physical Chemistry" is deservedly the most successful, being written in an easy, readable style, which makes it popular with the student. In his "New Era in Chemistry" he described the progress of the science from 1887 onwards, and struck a personal note which adds to the interest and pleasure of perusal.

J. W.

NOTES.

THE Paris correspondent of the *Times* states that the Committee of the Senate appointed to consider the Daylight Saving Bill has reported against the measure on the ground that the economy intended to be realised is doubtful, and that the change would cause serious inconvenience.

IN the recent debate on the Air Board in the House of Lords several references were made to the scientific side of aeronautics. This aspect of the subject is not nearly so well known and appreciated as it should be by the designers and constructors of our present aeroplanes. If the new Air Board succeeds in bringing about a better understanding between the practical designer and the scientific expert, and in enabling the results of scientific experiment and calculation to be used more widely in the actual production of aircraft, it will be doing a great service to the aeronautical industry. The proposal for the establishment of a separate Board of Inventions in connection with the Air Board seems to be a good one, provided that the Board consists of men who have sufficient technical knowledge to be able to discriminate between inventions of real use and the many "freak" inventions which now flood the country. A great deal of the time of scientific experts is now wasted in experimenting on inventions that should have been thrown out as obviously useless in the first place. The progress that has been made from the scientific point of view is very considerable. It is now possible to calculate with considerable accuracy the performance and stability of a new design from simple experiments on models in a wind tunnel. In the matter of scientific aeronautics we are well in advance of the enemy, except perhaps in connection with rigid airships. The chief necessity at the present time is that available scientific information should be used to the fullest advantage. It is only by the combination of scientific investigation with the practical experience of the pilot and the designer that the best results can be obtained, and the much-desired supremacy of the air definitely assured.

The following officers of the Linnean Society for the ensuing year were elected at the annual meeting of the society on May 24:—*President*, Sir David Prain, C.M.G.; *Treasurer*, Mr. H. W. Monckton; *Secretaries*, Dr. B. Daydon Jackson, Mr. E. S. Goodrich, and Dr. A. B. Rendle.

We regret to see the announcement of the death, on May 28, at seventy years of age, of Sir James F. Goodhart, consulting physician to Guy's Hospital and other institutions, and president of the Harveian Society of London in 1898.

The fourth Wilbur Wright Memorial Lecture of the Aeronautical Society, on "The Life and Work of Wilbur Wright," will be delivered by Mr. Griffith Brewer at the Royal Society of Arts, on Tuesday, June 6, at 3 p.m. The Rt. Hon. Lord Montagu of Beaulieu will preside.

At a meeting of the Institution of Mining Engineers, to be held at the rooms of the Geological Society, Burlington House, Piccadilly, W., on Thursday, June 8, Prof. F. W. Hardwick will deliver a lecture on "The History of the Safety-Lamp," in celebration of the centenary of its invention by George Stephenson and Sir Humphry Davy.

We regret to announce the death, on May 17, at eighty-four years of age, of Mrs. Mary Everest Boole, widow of George Boole, the mathematician. Devoted to her husband and his memory, she was an original and rather paradoxical writer; for example, on the strength of her knowledge of the mathematical theory of envelopes, she wrote a sort of metaphysical essay about free will, etc., in terms of an envelope-theory. Like Henry Drummond, she mistook a picturesque analogy for a real explanation; but the book is better worth reading than many more orthodox productions.

General Sir Douglas Haig, Commander-in-Chief of the British Forces in France and Belgium, in his first despatch, dated May 19, and covering the period from December 19, 1915, makes the following appreciative reference to the assistance afforded by chemists attached to the forces:—"The valuable nature of the work performed by the officers of the Central Laboratory and the Chemical Advisers with the Armies in investigations into the nature of the gases and other new substances used in hostile attacks, and in devising and perfecting means of protecting our troops against them, is deserving of recognition. The efforts of these officers materially contributed to the failure of the Germans in their attack of December 19, 1915, as well as in the various gas attacks since made."

Among the representatives of applied science who have lost their lives in the present war some mention should be made of Capt. Paul Hammond. He was born in Brazil of British parentage, and was educated at Tonbridge School. He studied at the School of Mines at Freiberg, in Saxony, where he graduated as a mining engineer. He was for some time engaged in mineralogical survey work in the south of the State of São Paulo, and afterwards practised as a consulting mining engineer in London. Shortly after the outbreak of war he received a commission in the 8th Battn. of the East Lancashire Regiment, and was Acting Major when he was wounded at Foncquevillers. He died eight days later, on February 25 of the present year, aged thirty-one. His keenness and courage stood him in good stead in his short military career, while his cheerfulness and kindliness endeared him to all who knew him.

A report has just been issued by the Committee appointed by the Home Secretary in March last to test experimentally the value of dry-powder fire-extinguishers in putting out fires such as are likely to be caused by bombs (Cd. 8250, price 1*d*.). These extinguishers generally contain as their main constituent sodium bicarbonate, the amount varying from 46 to 56 per cent. in the samples analysed. The particular make chosen for the fire experiments contained also approximately the same proportion of calcium carbonate, the total available carbon dioxide amounting to 12 or 13 per cent. The efficacy of the dry-powder preparations was compared with that of water applied (1) in buckets, and (2) in liquid extincteurs spraying a jet of water impregnated with carbon dioxide upon the fires. None of the agents employed had any material effect upon the combustion of the bomb itself. Water, however, was far more effective than the dry powder in preventing the spread of the fire, the wetting of the surrounding material confining the conflagration to the immediate neighbourhood of the bomb. The general conclusion arrived at was that by far the best extinguishing agent is a plentiful supply of water applied in the manner most convenient; the use of dry powder is to be deprecated as giving a misleading sense of security.

Some interesting details of his recent explorations in Central Asia have been furnished by Sir Aurel Stein on his return to England. He followed a route hitherto unknown to the Pamirs across Darel and Tangier, and in this portion of his journey he was assisted by Pakhtum Wali, an exiled chief of Chitral, who has recently carved out for himself a new kingdom in this region, and desires the friendly support of the Government of India. At an old sand-buried site in the Talkamakan desert many ancient writings on wood in an early Indian language dating from the third century A.D. were found, and the old route by which the Chinese conveyed their silks to Central Asia and the Mediterranean was traced. On this road hundreds of copper coins and bronze arrow-heads, the debris of their caravans, were picked up. On another part of the route the watch-towers erected by the Chinese to protect their western marches in Kansu against the Huns were examined. These travels involved more than 11,000 miles marching over mountain and desert, and Sir Aurel Stein gratefully acknowledges the kind treatment he received from the Russian officials. The explorer and the Indian Government, who organised the journey, are to be heartily congratulated on the successful completion of a task which will supply much new information on geography, history, art, and linguistics.

THE provisional programme of the eighty-sixth annual meeting of the British Association, to be held at Newcastle-upon-Tyne from Tuesday, September 5, to Saturday, September 9, under the presidency of Sir Arthur Evans, F.R.S., is about to be issued. The inaugural meeting will be held in the Town Hall on September 5, at 8.30 p.m., when the president will deliver an address to tne association. Evening discourses will be delivered in the Town Hall on Thursday, September 7, by Prof. W. A. Bone, F.R.S., who will deal with some recent advances in combustion, and on Friday, September 8, by Dr. P. Chalmers Mitchell, F.R.S., on "Evolution and the War." The reception-room will be in the College of Medicine. Some of the section-rooms will be in the same building, and the remainder will be conveniently accessible from it. The following are the presidents of sections:—A (Mathematical and Physical Science), Dr. A. N. Whitehead, F.R.S.; B (Chemistry), Prof. G. G. Henderson; C (Geology), Prof. W. S. Boulton; D (Zoology), Prof. E. W. MacBride, F.R.S.; E (Geography), Mr. D. G. Hogarth; F (Economic Science and Statistics), Prof. A. W. Kirkaldy; G (Engineering), Mr. G. G. Stoney; H (Anthropology), Dr. R. R. Marett; I (Physiology), Prof. A. R. Cushny, F.R.S.; K (Botany), Dr. A. B. Rendle, F.R.S.; L (Educational Science), Rev. W. Temple; M (Agriculture), Dr. E. J. Russell.

A VERBATIM report has just been published (London: Harrison and Sons; price 6*d.*) of the proceedings of the conference on the Neglect of Science, of which an account was given in NATURE of May 11 (p. 230). The conference was successful in eliciting some noteworthy utterances from leading representatives of many departments of national activity, and was fortunate in securing Lord Rayleigh as the chairman. The chief claim of the first resolution was that science "should form part of the entrance examination of the Universities of Oxford and Cambridge, as well as of the newer universities." Lord Rayleigh is Chancellor of the University of Cambridge, which still makes, not science, but Greek an essential subject of entrance examinations; and the purpose of the meeting over which he presided was to urge the need for reform. It is of particular interest, therefore, to give Lord Rayleigh's views upon the supposed advantages of compulsory classical study for the average boy in a public school. "I believe it is true," he said, "there is a certain type of mind for which a classical education on more or less existing lines is perhaps the best thing that can be found; but when it comes to the majority of schoolboys, I think it is nothing less than an absurdity to talk about impressing them with the language and literature of the ancients. It is well known that such a result is not achieved with the average boy. I myself was an average boy, in classical matters anyhow and I can speak from experience. I was not behind the average; but I know that the long years which I gave to classical work were to a very large extent thrown away, although I have no doubt I got something from it; but any idea of attaining to an appreciation of the language and literature of the Greeks, in my own case, and in the case of most of my friends, was mere moonshine. . . . You pretend to take a literary education by Greek, and you end by getting none at all. My own belief is that modern languages to a very large extent serve the purpose if properly taught and properly insisted upon, as they very frequently are not now."

THE death is announced of Prof. Paul Lemoult in tragic circumstances. Until the outbreak of war he occupied the chair of chemistry at the University of Lille, and was at the same time director of the School of Commerce of the North, and chief engineer to the chemical works of La Pallice, near La Rochelle. When Lille was occupied by the enemy some of the industries were transferred to the Lyons district, and under the direction of Prof. Lemoult a picric acid works was erected, which very soon was able to contribute substantially to the production of this explosive. On Monday, May 1, a fire broke out in the works, and very soon assumed serious proportions. Lemoult was soon on the spot, but, in spite of his efforts, the fire spread to the storehouse, which contained 150 tons of picric acid. The explosion which ensued destroyed the factory, and Lemoult lost his life. Paul Lemoult was born in 1871, and after passing through the Lyceum at Poitiers he was admitted to the Ecole Normale in 1891. He then entered the laboratory of Berthelot as *préparateur.* He obtained his doctorate in 1898 for a thesis on the polymerisation of cyanogen compounds, for which he obtained the Jerome Ponti prize. He afterwards took a post at the celebrated colour factory of St. Denis, where he remained several years, when he was appointed to the University of Lille. His wide knowledge of technical matters was greatly valued by the industrial community among which he lived, and the confidence which he inspired led to his appointment as director of the School of Commerce of the North. He made several valuable contributions on organic chemistry to the *Comptes rendus* of the Paris Academy of Sciences.

IN 1879 the arrangements for the transport of the obelisk from Alexandria to New York were undertaken by the Government of the United States. The work was completed, and the obelisk was erected at New York in October, 1879. During the course of the operations Lieut.-Commander H. H. Gorringe, who was in command of the expedition, made a collection of Egyptian antiquities, which were removed to America, but after his death the collection was completely lost to sight, and has only recently been examined by Prof. S. A. B. Mercer, who gives an account of it in part ii. (1916) of *Ancient Egypt.* It turns out to be of exceptional interest, containing a number of fine terra-cotta figurines of Harpocrates and Isis, dating from the Roman period. The gems of the collection are a beautiful bronze figure of Ptolemy Lathyros, an excellent example of Ptolemaic art; a number of bronze figurines of the Roman period, and statues of Osiris, Sekhmet, Neith, and Isis of the twenty-sixth dynasty. In the same issue of *Ancient Egypt* Prof. C. G. Seligman describes a remarkable ivory comb of the prehistoric period, with a representation of the hippopotamus goddess, Taurt, which seems to be the earliest representation of this divinity, and indicates that her cult prevailed in a time earlier than is usually supposed.

THE visit of the British Association to Winnipeg in 1909 gave a welcome stimulus to ethnographic work in Canada, of which an account is given by Mr. A. C. Breton in *Man* for April. The Dominion Government has contributed liberally to this work by establishing an Anthropological Division of the Geological Survey, with charge of the Victoria Memorial Museum at Ottawa as the centre of research, and it has already published a series of papers of exceptional value. Canada possesses at the present time no fewer than thirty museums equipped with anthropological departments, the most important being that at Ottawa. In this the complete Labrador Eskimo ethnological and archæological departments are of special interest. Toronto possesses the cranial collection of the late Sir D. Wilson, and a fine series of skeletons from mounds in Ontario and Manitoba, brought together by Prof. Montgomery. In the Provincial Museum in the same city are stored collections of Ontario skulls and a mass of stone implements brought from ancient sites in the province by the late Dr. David Boyle. A good example of a local museum is that of the Rocky Mountains Park at Banff, where Mr. Harlan Smith is in charge of fine collections from the tribes of that region. The Dominion Government deserves warm congratulations for the active interest it has shown in developing the study of the ethnology and archæology of the country.

The *Annals of Tropical Medicine and Parasitology*, vol. x., No. 1, April, contains six papers. Dr. H. H. Scott deals with the vomiting sickness of Jamaica; Dr. G. Duncan Whyte with simplified diagnosis and treatment of ancylostomiasis; Dr. E. R. Armstrong with differential blood counts in malaria; Mr. H. F. Carter with three new African midges; Sir Leonard Rogers with the reduction of the alkalinity of the blood in cholera; and Dr. H. R. Carter, of U.S.A., with immunity to yellow fever. Dr. Scott, who is Government bacteriologist in Jamaica, after a long and careful study, concludes that vomiting sickness, so prevalent in that island, is due to poisoning by ackee fruit, *Blighia sapida*. There has been much difference of opinion as to the causation of this vomiting sickness, yellow fever and cerebro-spinal meningitis having been considered to be the cause of death in many of the cases in the past. Dr. Scott found in 1914–15 that ackees formed part of the last meal taken in health before the onset of the disease. Persons taking the "soup," or "pot-water," made with ackees in certain conditions, showed the most acute symptoms; the onset occurred in two hours, and death nearly always resulted. Unopened ackees, those picked from a decayed, bruised, or broken branch, those forced open unnaturally, and those with a soft spot are poisonous. Much of the poison is extracted by boiling with water. The affection is largely one of childhood. By experiment it was determined that intragastric administration of an extract, made by boiling unopened ackees with water, produced in three kittens and one pup the symptoms and pathological changes seen in cases of vomiting sickness. The pathological changes in man and experimental animals are described, and are well illustrated in two plates.

In the *American Naturalist* for April Prof. T. Waterman discusses the evolution of the human chin. His main object is to demonstrate the fallacy of the contention of Dr. Robinson that the human "chin" has evolved as a consequence of the habit of articulate speech. Prof. Waterman's task is not difficult, but his essay serves a very useful purpose, and his facts are admirably marshalled. It might, however, have been pointed out that the evolution of the chin is due as much to the shortening of the facial portion of the skull as to the reduction of the teeth.

The *Museum Journal* of Philadelphia for December has just reached us. Among other items of interest, it contains a very readable account of the Eskimo of Coronation Gulf, known also as the "Copper" Eskimo, from the fact that these people are largely dependent on this metal for their implements. It is among them that Stefansson found his "blond Eskimo." The clothing, weapons, and methods of hunting are described at length, but no description of the physical characters of these people is given. Copper appears to be the only native metal they possess, but they also use iron and brass, though only to a very limited extent. How, and whence, they obtain these is not stated

Mr. Halsey Bagg, in the *American Naturalist* for April, records the results of his recent attempts to measure individual differences in behaviour in white mice, and therefrom to determine the degree to which kinds of conduct can be established in family lines by selection. His choice of white mice, in preference to man, he explains, was determined by the fact that in man the experimental method cannot be used. Mr. Bagg's test of alertness and educability was made through the medium of a maze ending in a food compartment. Altogether ninety mice were used, and each individual was passed through the maze seventeen times. There were no marked differences between the sexes in regard to this test of ability, but yellow mice proved inferior to white in this ordeal. The author found marked individual differences in behaviour, and discovers an apparent resemblance among individuals of the same litter.

An interesting point in relation to the geographical distribution of British Mollusca will be found in the *Scottish Naturalist* for May. Therein Mr. Denison Roebuck reviews the history of a slug, *Limax tenellus*, found by the Rev. R. Godfrey, in the Rothiemurchus Forest in 1904, after it had been lost sight of for fifty-six years. Some were obtained from under stones, but the majority were taken from old pine branches covered with decayed pine needles and other rotten vegetation. This discovery of the nature of the habitat at once threw a flood of light upon the occurrence of the species, and showed that the reason it had so long escaped notice was due to this preference for aboriginal pine forests, an area conchologists had never thought of searching, from a belief that pine was inimical to molluscan life. The clue obtained, search was at once made on an extended scale, with the result that it has since been found in no fewer than six Scottish and eleven English counties, five of these forming a ring encircling London. But, more than this, it occurs in abundance in the pine forests of Switzerland, and it now remains to discover the intermediate stations on the mainland of Europe.

Messrs. Sherratt and Hughes, Manchester, have published a further account, by Mr. J. Arthur Hutton, of investigations into the salmon fisheries of the River Wye. Good statistics of the fish caught by rods and nets, and measurements and determinations of age are given, and the author deduces some very interesting results. The scarcity in very large spring and summer salmon (five and a half to six years old) indicates an apparent failure of the 1910 hatch, and this appears to be traceable to two causes:—(1) The exceptional drought and high temperature in the rivers in the summer of 1911, which probably encouraged coarse fish in competition with the early stages of salmon; (2) the marine conditions in 1912, the year when the parr hatched in 1910 would migrate to the sea. This was a season of high salinity in the sea, and of low autumn temperature. A further point brought out by Mr. Hutton is that Wye salmon have for some years been migrating and spawning earlier than usual. This is possibly an integrative effect of a series of exceptionally mild winters. The change is probably only temporary.

Oranges and lemons in which the style is persistent up to maturity are known to occur at certain seasons and in certain localities, and various theories have been advanced to account for the fact, some writers suggesting that these forms are peculiarities of a distinct variety of the plant. In a note contributed to the *Atti dei Lincei,* xxv. (1), 3, R. Pirotta dissents from these views, and advances the theory that the persistence or otherwise of the style depends on the effects of weather in retarding or accelerating the processes of fertilisation and the ripening of the fruits.

Owing to the scarcity of dyestuffs resulting from the war, considerable interest attaches to the attempts to obtain and utilise new colouring matters. In this connection the *Atti dei Lincei,* xxv. (1), 5, contains an account of investigations by R. Lepetit and C. Carta Satta on the yellow substance extracted from the bark of *Pinus pinaster.* These researches, commenced ten years ago, show that this colouring matter furnishes tints of a beautiful yellow with mordants of alum, of an orange colour with tin, of a less bright yellow with chromium, dirty yellow with copper, and olive-brown with iron. It is thus identifiable with quercetin, and exists in the bark of the fir-tree in a state of complete combination with a tanno-glucoside.

The report of the Botanic Gardens and Government Domains, Sydney, New South Wales, has just been received, and contains an interesting account of the various botanical activities undertaken under the direction of Mr. J. H. Maiden. In addition, the report includes a valuable contribution relating to the Arachnida, Myriapoda, and Insecta of the Botanic Gardens, by Mr. Rainbow, entomologist of the Australian Museum, and is on similar lines to the account of the mammals, birds, reptiles, fishes, and shells published in the report of the previous year. A long list is given of interesting plants introduced, or re-introduced, into the Gardens, and in the herbarium report we note that 2725 sheets have been added to the collection, many being additions to the flora of New South Wales.

The report of the Agricultural Department and Experiment Station in the Virgin Islands for the year ended March, 1915, has recently reached us, and shows that considerable attention has been given to the cotton crop, especially with regard to establishing a local seed supply, and thus ensuring uniformity of crop and staple. Coconut planting in the islands is being encouraged, and nearly 3000 nuts were distributed during the year. An Onion Growers' Association has also been formed with every prospect of success. A similar association has been formed in Antigua, where conditions are also favourable for this crop. From the reports of the various islands, it is clear that the Imperial Department of Agriculture is making every effort to extend the scope and foster the progress of agriculture in the West Indies.

In the course of the voyage of the *Carnegie* from New Zealand to South Georgia last December and January search was made for the Nimrod and Dougherty Islands in the South Pacific. The search in both cases was fruitless. In the *Geographical Review* for April (vol. i., No. 4), where an account of the search appears, it is suggested that the result of this work is to remove these islands, especially Dougherty Island, from the map. The writer is perhaps not aware that in 1909, on the homeward voyage of the *Nimrod,* with Sir E. H. Shackleton's Antarctic Expedition, Capt. J. K. Davis made a thorough search for these islands, and failed to find them. They were in consequence removed from the last edition of the Prince of Monaco's bathymetrical chart of the oceans. Without a doubt icebergs gave rise to the reports of the islands, for it is very difficult in certain conditions of light to distinguish some icebergs from land.

During the last year or two the *Geographical Journal* has been devoting some attention to articles on different regions, more or less affected by the war, each from the pen of an expert. In the issue for May, 1916 (vol. xlvii., No. 5), Prof. J. W. Gregory has a long article, illustrated with maps, on Cyrenaica. Prof. Gregory deals particularly with the economic possibilities of Cyrenaica and its future as a colony. Over this he is not enthusiastic, but at the same time is strongly opposed to the view that Cyrenaica is a useless desert. The climatic question is an important one, and Prof. Gregory holds that the evidence points to no change since classical times; nor will he admit that Turkish control has been altogether bad for the land. The change in the economic value of Cyrenaica since Roman times he holds is due mainly to competition by new lands, making the production of corn and wool less profitable, and to honey, a valuable product in the past, being superseded by sugar-cane and beetroot. The decline in the trans-Saharan trade, owing to its diversion to Nile and Niger routes, and the development of steam navigation on the Mediterranean have robbed the country of its position on several great trade routes.

In connection with the *Daily Weather Report* the Meteorological Office has issued a revised edition of the quinquennial appendix, giving normal values for pressure, temperature, and bright sunshine. The values are extended to include the year 1915, and with the increased length of period are becoming of greater value. Pressure normals for the hour of the reports are now for ten years instead of five, while the normals for air temperature, rainfall, and bright sunshine are for thirty-five years, from 1881 to 1915. The values are given for the several months, and are issued in quarterly sheets. Normals for the current season show only slight differences of pressure, the values being relatively lower in the north and west than in the south and east. Temperature is rising briskly, and in the late spring and early summer the mean daily maximum is about 10° warmer in the south of England than in Scotland, and the mean night temperature shows an almost equally large difference. Rainfall is increasing somewhat at the English stations, while the duration of bright sunshine is at about its maximum.

According to a short note in the *Atti dei Lincei,* xxv. (1), 5, containing the Proceedings for March 5, it would appear that piracy of mathematical discoveries was common in Italy in early times. In this note the writer, Prof. Gino Loria, discusses the claims of a work by Luca Pacioli (1445–1514), entitled "Divina Proportione," dealing with mensuration of plane and solid figures, and gives evidence in support of the view that the substance of this work was purloined from an unpublished manuscript by Pier della Francesca entitled "De corporibus regularibus." That Tartaglia's solution of the cubic equation should have become wrongly attributed to Cardan would appear to be the result of a practice of which Tartaglia himself was not altogether innocent. A second part of Prof. Gino Loria's communication deals with some interesting writings by Tommaso Ceva (1648–1737) and Guido Grandi (1671–1737) on the properties of certain curves traced on the surfaces of cones and cylinders. These investigations anticipate Monge's descriptive geometry, inasmuch as the method of projection was used in studying the curves in question. Ceva discussed the properties of the curve which projects into a spiral of Archimedes, and Grandi applied the same method to the curve of which the projection is an equiangular spiral.

The October-November part and the December (1914) part of the *Journal de Physique,* which were published in the earlier part of May, complete vol. iv. of the journal. Amongst the longer papers contained in the two parts may be mentioned one by Prof. Marcel Brillouin on kinetic energy and absolute temperature in isotropic solids, the concluding portion of Prof. Seligman-Lui's paper on the mechanical interpretation of the law of gravitation, Prof. Goure de Villemontée's paper on the propagation of electricity through paraffin oil, and Prof. E. Bouty's paper on some examples of the application of the method of closed cycles. In addition, there are shorter papers on the localisation of foreign bodies in the organism by radiographs, and on the recent determination of the latent heat of fusion of ice at the Bureau of Standards at Washington. The abstracts of papers published in other journals include a number in the *Philosophical Magazine, Journal de Chimie-physique, Annalen der Physik, Physikalische Zeitschrift,* and the *Zeitschrift für Physikalische Chemie.* The author index of the volume covers twenty, the analytical table of contents sixteen, and the volume 850 pages.

Mr. A. L. Parson has published a novel theory of the constitution of atoms based on a new conception of the structure of the electron ("A Magneton Theory of the Structure of the Atom," Smithsonian Miscellaneous Collections," vol. lxv., No. 11). Instead of the usual assumption that the electron possesses spherical symmetry, the author considers it to be a ring of negative electrification revolving with high speed. The diameter of the ring is supposed to be of the same order of magnitude as atomic diameters, and the tangential velocity of revolution to be about the velocity of light. The author points out that these assumptions are not inconsistent with the experiments on which our knowledge of the electron is based, and shows that they offer a mode of escape from certain well-known difficulties in all theories of atomic structure based on the usual assumptions of simple electrons. In the paper the application of the new conception to the explanation of the chemical and magnetic properties of the elements is discussed at considerable length, but it may be noted that all the considerations are only of a qualitative character, and do not provide any definite test of the adequacy of the theory. It should be added that no use is made of the recent valuable and extensive evidence as to the structure of atoms derived from the study of the phenomena of radio-activity and X-rays, and, indeed, it seems difficult to account for them on the new theory.

Mr. F. C. Thompson, in a paper recently read before the Faraday Society, directs attention to the fact that, almost without exception, alloys which are of industrial utility consist of one or more solid solutions. The brasses, nearly all the bronzes, the nickel brasses, most coinage alloys, aluminium alloys for aeroplane and motor-car construction, fall within this category. The hardening of steel is due to the formation, and more or less complete preservation on quenching, of a solid solution. The special properties of the nickel and nickel chromium steels are due to the improvement conferred by the alloying element or elements which dissolve in the iron. The dominating characteristic of these alloys as compared with the pure metals from which they are made is "toughness," a combination of strength and ductility. As a result of his study of the matter, Mr. Thompson concludes that the remarkable hardness and high electrical resistivity of solid solutions of metals point strongly to the fact that they are caused by crystalline distortion similar to that which arises from cold work. This is explained on the theory that the process of crystallisation of such solutions causes an equalisation of the atomic volumes of the constituents. Elastic stresses are thus set up which, in their turn, increasing the resistance to further stresses, raise the hardness of the mass. Such a theory would lead to a parabolic curve expressing the relationship of the hardness to the concentration throughout the series, with a maximum at the composition of 50 atomic per cent. of each metal. The silver-gold series of alloys fits into this generalisation.

Technologic Paper No 68 of the U.S. Bureau of Standards deals with standardisation of automobile tyre fabric testing. The chief causes of variation in test results are due to different testing machines, dimensions of test specimens, moisture content of specimen at time of test, method of sampling, and lack of uniformity in the material. There is but little difference in the results for strips of 1 in. and 2 in. width, and the former width has advantages which indicate that preference should be given to it. The fabrics were supposed to contain twenty-three threads per inch, and the actual width of the specimens was fixed by counting twenty-three threads. The average strength of thirty tests on 1-in. specimens was 247 lb. Samples of cotton material increase in strength considerably when they have absorbed moisture from the atmosphere. It is best to dry the sample in such a way as to eliminate moisture effects entirely. There are only small differences in strength for specimens selected from different parts of the width of the fabric; samples should be cut from different parts, and the average result taken. Tests made in different machines show differences amounting to as much as 15·9 per cent. It is recommended that testing machines be calibrated at frequent and regular intervals.

OUR ASTRONOMICAL COLUMN.

Large Daylight Fireball on May 20.—Mr. Denning writes:—"On May 20, at 8.8 p.m. (18 minutes after sunset, Greenwich), a splendid meteor was seen by a great many persons in the southern counties of England. The sky was clear everywhere, and the large green disc of the meteor created a vivid effect as it passed with a rather slow, apparent motion from N. to S. across the western heavens. Reports from fifty-six casual observers of the phenomenon have been received, and it appears from a preliminary discussion of the data that the object was directed from a radiant in Perseus situated in the N.N.W. sky at the time of the event. The height of the meteor was from about 75 to 27 miles along a course, slightly declining in height, of more than 200 miles. The position was from over the S.E. coast of Ireland to the English Channel, far south of Devonshire.

"The estimates of the observed duration of flight of the meteor are rather conflicting, but, taking a mean of what appear to be the best values, the real velocity was about 32 miles per second.

"This fine meteor adds another instance to the rather extensive list of similar objects which have made their apparitions in twilight. The hour following sunset is highly favourable in some respects to the production of these objects, though the prevailing daylight must naturally cause many of them to elude notice."

Comet 1916*b* (Wolf), 1916 ZK (Planet).—From *Astronomische Nachrichten,* No. 4845, we learn that observations of the anomalous object 1916 ZK, discovered